UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/484,835	01/18/2000	Jin Huai	1314.3009	1172

7590 10/09/2002

IP Strategies P.C.
806 7th Street N.W.
Suite 301
Washington, DC 20001

EXAMINER
PARTON, KEVIN S

ART UNIT	PAPER NUMBER
2153	#8

DATE MAILED: 10/09/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/484,835	Applicant(s) HUAI ET AL.	
	Examiner Kevin Parton	Art Unit 2153	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 January 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The abstract of the disclosure is objected to because the phrase "The invention relates to..." is unnecessary to describe the invention. Correction is required. See MPEP § 608.01(b).

2. The disclosure is objected to because of the following informalities: In the Cross References section, the serial number for the related application filed January 5, 2000 is not included.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 14 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claim is unclear as written and this precludes examination. It appears that the phrase "...for determining which members of the set of multiple shortest paths is a part of said..."

should read "...for determining which members of the set of multiple shortest paths is protectable is a part of said..." but he exact meaning as currently written is unclear.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

6. Claims 1, 2, 8, 9, 11, 15, and 16 are rejected under 35 U.S.C. 102(e) as being anticipated by Doshi et al. (USPN 6,130,875).

7. Regarding claim 1, Doshi et al. (USPN 6,130,875) teach a system for identifying a protectable path between two network elements, said method comprising:

a. Determining a set of multiple shortest paths between the two network elements (column 11, lines 18-20). Note that in the reference, the primary link is referred to as the "demand" and all other links are determined to provide the same source and destination node. Also please note that the paths

of the reference may be selected to be shortest paths between the network elements depending on the definition.

b. Determining which members of the set of multiple shortest paths are protectable (column 10, lines 64-65). Note that in the reference, a number of edge-disjoint paths are determined for restorative paths for the primary, this shows the primary path to be protectable. Please note that any number of definitions of "protectable" could be used. In this example, the reference shows that all paths are edge-disjoint and share no common nodes.

8. Regarding claim 2, Doshi et al. (USPN 6,130,875) teach all the limitations as applied to claim1. They further teach means wherein each of the steps is performed before a search is made for alternate edge disjoint paths (column 11, lines 18-20; column 12, lines 6-11). Note that in the reference, the primary path is chosen, then a number of shortest paths for the same source-destination pair are selected. These paths are then determined to be edge-disjoint from the original primary path.

9. Regarding claim 8, Doshi et al. (USPN 6,130,875) teach a system for finding edge-disjoint recovery paths comprising means for:

a. Determining a set of multiple shortest paths between two network elements (column 11, lines 18-20). Note that in the reference, the primary link is referred to as the "demand" and all other links are determined to provide the same source and destination node. Also please note that the paths of the reference may be selected to be shortest paths between the network elements depending on the definition.

b. Identifying and selecting as the shortest path between said two network elements, a path which is protectable (column 10, lines 64-65). Note that in the reference, a number of edge-disjoint paths are determined for restorative paths for the primary, this shows the primary path to be protectable. Please note that any number of definitions of "protectable" could be used. In this example, the reference shows that all paths are edge-disjoint and share no common nodes.

c. Identifying at least one alternate edge disjoint path for each of the selected shortest paths (column 10, lines 64-65). Note that in the reference, an edge disjoint path is selected to be the recovery path for the primary.

10. Regarding claim 9, Doshi et al. (USPN 6,130,875) teach all the limitations as applied to claim 8. They further teach means wherein determining a set of multiple shortest paths and the identifying and selecting as the shortest path between two network elements are performed before a search is made for alternate edge-disjoint paths (column 11, lines 18-20; column 12, lines 6-11). Note that in the reference, the primary path is chosen, and then a number of shortest paths for the same source-destination pair are selected. These paths are then determined to be edge-disjoint from the original primary path.

11. Regarding claim 11, Doshi et al. (USPN 6,130,875) teach a system for identifying a protectable path between two network elements, said method comprising:

a. A code segment for determining a set of multiple shortest paths between the two network elements (column 11, lines 18-20). Note that in the reference, the primary link is referred to as the "demand" and all other links are

determined to provide the same source and destination node. Also please note that the paths of the reference may be selected to be shortest paths between the network elements depending on the definition.

b. A code segment for determining which members of the set of multiple shortest paths are protectable (column 10, lines 64-65). Note that in the reference, a number of edge-disjoint paths are determined for restorative paths for the primary, this shows the primary path to be protectable. Please note that any number of definitions of "protectable" could be used. In this example, the reference shows that all paths are edge-disjoint and share no common nodes.

12. Regarding claim 15, Doshi et al. (USPN 6,130,875) teach all the limitations as applied to claim 11, they further teach means for identifying at least one alternate edge disjoint path for at least one of the set of multiple shortest paths which is able to be path protected (column 10, lines 64-65).

13. Regarding claim 16, Doshi et al. (USPN 6,130,875) teach all the limitations as applied to claim 15, they further teach means wherein determining which members of the set of multiple shortest paths is activated prior to said code segment for identifying at least one alternate edge disjoint path (column 11, lines 18-20; column 12, lines 6-11). Note that in the reference, the primary path is chosen, then a number of shortest paths for the same source-destination pair are selected. These paths are then determined to be edge-disjoint from the original primary path.

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

15. Claims 3-7, 10, 12, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Doshi et al. (USPN 6,130,875) in view of Clarke et al. (USPN 4,967,345).

16. Regarding claim 3, although the system disclosed by Doshi et al. (USPN 6,130,875) (as applied to claim 1) shows substantial features of the claimed invention, it fails to disclose means wherein each network element to which there is more than one shortest path is marked.

Nonetheless, these features are well known in the art and would have been an obvious modification of the system disclosed by Doshi et al. (USPN 6,130,875), as evidenced by Clarke et al. (USPN 4,967,345).

In an analogous art, Clarke et al. (USPN 4,967,345) disclose a system for finding a set of shortest paths between two nodes wherein each network element to which there is more than one shortest path is marked (column 6, lines 4-9). Note that in the reference, the nodes to which there are more than shortest paths are noted in a table and those shortest paths are assigned a probability of being used.

Given the teaching of Clarke et al. (USPN 4,967,345), a person having ordinary skill in the art would have readily recognized the desirability and advantages of modifying Doshi et al. (USPN 6,130,875) by employing the use of a marker for nodes with more than one shortest path leading to them. This allows the system to note the protectable links and determine the most reliable path to choose as a primary and secondary route.

17. Regarding claim 4, although the system disclosed by Doshi et al. (USPN 6,130,875) (as applied to claim 3) shows substantial features of the claimed invention, it fails to disclose means

wherein determining which members of the set of multiple shortest paths is protectable is accomplished by examining the parent node of each of the members of the set of multiple shortest paths, and selecting those members of the set of multiple shortest paths for which the parent node is not marked.

Nonetheless, these features are well known in the art and would have been an obvious modification of the system disclosed by Doshi et al. (USPN 6,130,875), as evidenced by Clarke et al. (USPN 4,967,345).

In an analogous art, Clarke et al. (USPN 4,967,345) disclose a system for determining multiple shortest paths between source-destination pairs wherein determining which members of the set of multiple shortest paths is protectable is accomplished by examining the parent node of each of the members of the set of multiple shortest paths, and selecting those members of the set of multiple shortest paths for which the parent node is not marked (column 6, lines 20-25). Note that in the reference, the nodes to which a common link is required are placed in a table. That table is referenced when selecting a path, if it is desire to have edge disjoint paths, the table would be used to avoid that.

Given the teaching of Clarke et al. (USPN 4,967,345), a person having ordinary skill in the art would have readily recognized the desirability and advantages of modifying Doshi et al. (USPN 6,130,875) by employing the use of the marked nodes to determine the edge-disjoint path. This is a simple way to reliably find the protected paths and save computation time. Having this set of protected shortest paths benefits the system by routing traffic over a fault tolerant line thereby decreasing delays due to link failure.

18. Regarding claim 5, Doshi et al. (USPN 6,130,875) disclose a system for selecting a path between two network elements such that the path has an alternate edge disjoint path between the two network elements, the method comprising:

a. Determining a set of multiple paths between a source network element and a set of destination network elements (column 11, lines 18-20). Note that in the reference, the primary link is referred to as the "demand" and all other links are determined to provide the same source and destination node.

b. Identifying and selecting a path to a particular destination network element having an edge disjoint alternate path (column 10, lines 64-65). Note that in the reference, a number of edge-disjoint paths are determined for restorative paths for the primary, this shows the primary path to be protectable.

Although the system disclosed by Doshi et al. (USPN 6,130,875) shows substantial features of the claimed invention, it fails to disclose means for:

a. Marking each member of the set of destination network elements for which there are two or more shortest paths to.

b. Identifying and selecting a shortest path to a particular destination network element having an edge disjoint alternate path, wherein the shortest path is selected as the path for which the destination element is not marked.

Nonetheless, these features are well known in the art and would have been an obvious modification of the system disclosed by Doshi et al. (USPN 6,130,875), as evidenced by Clarke et al. (USPN 4,967,345).

In an analogous art, Clarke et al. (USPN 4,967,345) disclose a system for determining multiple shortest paths between network elements (abstract; column 5, lines 61-62) with means for:

a. Marking each member of the set of destination network elements for which there are two or more shortest paths to (column 6, lines 4-9). Note that in the reference, the nodes to which there are more than shortest paths are noted in a table and those shortest paths are assigned a probability of being used.
b. The shortest path is selected as the path for which the destination element is not marked (column 6, lines 20-25). Note that in the reference, the nodes to which a common link is required are placed in a table. That table is referenced when selecting a path, if it is desire to have edge disjoint paths, the table would be used to avoid that. This benefits the system by giving a simple way to determine which paths are edge disjoint for selecting a primary and secondary path.

Given the teaching of Clarke et al. (USPN 4,967,345), a person having ordinary skill in the art would have readily recognized the desirability and advantages of modifying Doshi et al by employing the use of markers to note the elements to which there are multiple shortest paths. Using the table of Clarke et al. (USPN 4,967,345), the edge-disjoint path can be selected by noting which source-destination pairs have shared links (i.e. marked nodes) and selecting others. This is a simple way to reliably find the protected paths and save computation time. Having this set of protected shortest paths benefits the system by routing traffic over a fault tolerant line thereby decreasing delays due to link failure.

19. Regarding claim 6, Doshi et al. (USPN 6,130,875) teach all the limitations as applied to claim 5. They further teach means wherein each of the steps is performed before a search is made for alternate edge disjoint paths (column 11, lines 18-20; column 12, lines 6-11). Note that in the reference, the primary path is chosen, then a number of shortest paths for the same source-destination pair are selected. These paths are then determined to be edge-disjoint from the original primary path.

20. Regarding claim 7, Doshi et al. (USPN 6,130,875) teach all the limitations as applied to claim 5, they further teach means wherein identifying and selecting the shortest path to a particular destination network element is accomplished during and as a part of the generation of a shortest path tree, and before a search is made for an edge disjoint path (column 11, lines 18-20; column 12, lines 6-11). Note that in the reference, the primary path is chosen, and then a number of shortest paths for the same source-destination pair are selected. These paths are then determined to be edge-disjoint from the original primary path.

21. Regarding claim 10, although the system disclosed by Doshi et al. (USPN 6,130,875) (as applied to claim 9) shows substantial features of the claimed invention, it fails to disclose means for marking each network element for which there is more than one shortest path, and selecting as the shortest path is accomplished by examining the parent node of each member of the set of shortest paths and selecting a shortest path for which the parent node is not marked.

Nonetheless, these features are well known in the art and would have been an obvious modification of the system disclosed by Doshi et al. (USPN 6,130,875), as evidenced by Clarke et al. (USPN 4,967,345).

In an analogous art, Clarke et al. (USPN 4,967,345) disclose a system for determining multiple shortest paths between network elements (abstract; column 5, lines 61-62) with means for marking each network element for which there is more than one shortest path, and selecting as the shortest path is accomplished by examining the parent node of each member of the set of shortest paths and selecting a shortest path for which the parent node is not marked (column 6, lines 4-9; column 6, lines 20-25). Note that in the reference, the nodes to which there are more than shortest paths are noted in a table and those shortest paths are assigned a probability of being used. Note that in the reference, the nodes to which a common link is required are placed in a table. That table is referenced when selecting a path, if it is desire to have edge disjoint paths, the table would be used to avoid that. This benefits the system by giving a simple way to determine which paths are edge disjoint for selecting a primary and secondary path.

Given the teaching of Clarke et al. (USPN 4,967,345), a person having ordinary skill in the art would have readily recognized the desirability and advantages of modifying Doshi et al by employing the use of markers to note the elements to which there are multiple shortest paths. Using the table of Clarke et al. (USPN 4,967,345), the edge-disjoint path can be selected by noting which source-destination pairs have shared links (i.e. marked nodes) and selecting others. This is a simple way to reliably find the protected paths and save computation time. Having this set of protected shortest paths benefits the system by routing traffic over a fault tolerant line thereby decreasing delays due to link failure.

22. Regarding claim 12, although the system disclosed by Doshi et al. (USPN 6,130,875) (as applied to claim 11) shows substantial features of the claimed invention, it fails to disclose

means wherein the code segment for determining a set of multiple shortest paths marks each node to which there is more than one shortest path.

Nonetheless, these features are well known in the art and would have been an obvious modification of the system disclosed by Doshi et al. (USPN 6,130,875), as evidenced by Clarke et al. (USPN 4,967,345).

In an analogous art, Clarke et al. (USPN 4,967,345) disclose a system for finding a set of shortest paths between two nodes wherein the code segment for determining a set of multiple shortest paths marks each node to which there is more than one shortest path (column 6, lines 4-9). Note that in the reference, the nodes to which there are more than shortest paths are noted in a table and those shortest paths are assigned a probability of being used.

Given the teaching of Clarke et al. (USPN 4,967,345), a person having ordinary skill in the art would have readily recognized the desirability and advantages of modifying Doshi et al. (USPN 6,130,875) by employing the use of a marker for nodes with more than one shortest path leading to them. This allows the system to note the protectable links and determine the most reliable path to choose as a primary and secondary route.

23. Regarding claim 13, although the system disclosed by Doshi et al. (USPN 6,130,875) (as applied to claim 11) shows substantial features of the claimed invention, it fails to disclose means wherein the code segment for determining which members of the set of multiple shortest paths is able to be path protected is accomplished by examining a parent node in each of the shortest paths, and selecting a shortest path for which the parent node is not marked.

Nonetheless, these features are well known in the art and would have been an obvious modification of the system disclosed by Doshi et al. (USPN 6,130,875), as evidenced by Clarke et al. (USPN 4,967,345).

In an analogous art, Clarke et al. (USPN 4,967,345) disclose a system for determining multiple shortest paths between network elements (abstract; column 5, lines 61-62) wherein determining which members of the set of multiple shortest paths is able to be path protected is accomplished by examining a parent node in each of the shortest paths, and selecting a shortest path for which the parent node is not marked (column 6, lines 4-9; column 6, lines 20-25). Note that in the reference, the nodes to which there are more than shortest paths are noted in a table and those shortest paths are assigned a probability of being used. Note that in the reference, the nodes to which a common link is required are placed in a table. That table is referenced when selecting a path, if it is desire to have edge disjoint paths, the table would be used to avoid that. This benefits the system by giving a simple way to determine which paths are edge disjoint for selecting a primary and secondary path.

Given the teaching of Clarke et al. (USPN 4,967,345), a person having ordinary skill in the art would have readily recognized the desirability and advantages of modifying Doshi et al by employing the use of markers to note the elements to which there are multiple shortest paths. Using the table of Clarke et al. (USPN 4,967,345), the edge-disjoint path can be selected by noting which source-destination pairs have shared links (i.e. marked nodes) and selecting others. This is a simple way to reliably find the protected paths and save computation time. Having this set of protected shortest paths benefits the system by routing traffic over a fault tolerant line thereby decreasing delays due to link failure.

Conclusion

24. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Please see the following:

a. Grover (USPN 4,956,835) – Teaches a system for self-restoring networks and path determination.

b. Moran et al. (USPN 5,812,524) – Determination of optimal restoration routes in networks.

c. Narvaez-Guarnieri et al. (USPN 6,347,078) – System for multiple path routing for the same source-destination pair.

d. Rochberger et al. (USPN 6,061,736) – System for routing over similar paths.

e. Zaumen et al. (USPN 5,881,243) – System for generating multiple loop-free paths for source-destination pairs.

f. Medard et al. (USPN 6,047,331) – System for protection of network paths

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Parton whose telephone number is (703)306-0543. The examiner can normally be reached on M-F 8:00AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenton Burgess can be reached on (703)305-4792. The fax phone numbers for the organization where this application or proceeding is assigned are (703)746-9242 for regular communications and (703)746-7238 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3900.

Kevin Parton
Examiner
Art Unit 2153

ksp
October 7, 2002

GLENTON B. BURGESS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100